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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/540,359	03/31/00	BROWN	N 50694

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IM52/0306

EXAMINER
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FEELY, M

ART UNIT	PAPER NUMBER
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1741

DATE MAILED:

03/06/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/540,359

Applicant(s)

BROWN ET AL.

Examiner

Michael J Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding claims 1 and 17, the phrase "optionally" renders the claim indefinite because the list of potential alternatives is ambiguously variable. See MPEP § 2173.05(h).

### *Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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6. Claims 1, 4, 6, 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Wehlage et al. (US Pat. No. 5,951,841).

Regarding claim 1, Wehlage et al. disclose an electrolyte composition for depositing tin or tin-alloy on a substrate (column 6, lines 40-49), comprising one or more tin compounds (column 6, line 49), one or more acidic electrolytes (column 6, lines 40-49; column 8, lines 14-17), one or more alkylene oxide compounds (column 7, lines 26-34), one or more polyalkylene glycols (column 8, lines 7-14) and optionally one or more additives (column 6, lines 45-48).

Regarding claim 4, Wehlage et al. disclose an electrolyte composition of claim 1 wherein the acidic electrolyte is selected from alkane sulfonic acids, aryl sulfonic acids, sulfuric acid, sulfamic acid, hydrochloric acid, hydrobromic acid and fluoroboric acid (column 8, lines 14-17).

Regarding claim 6, Wehlage et al. disclose an electrolyte composition of claim 1 wherein the alkylene oxide compound is selected from ethylene oxide/propylene oxide block copolymers, alkylene oxide condensation products of an organic compound having at least one hydroxy group and 20 carbon atoms or less, or compounds prepared by adding oxypropylene to polyoxyethylene glycol (column 7, lines 32-34).

Regarding claim 9, Wehlage et al. disclose an electrolyte composition of claim wherein the polyalkylene glycol is selected from polyethylene glycol or polypropylene glycol (column 8, lines 7-9).

Regarding claim 10, Wehlage et al. disclose an electrolyte composition of claim 1 wherein the polyalkylene glycol has an average molecular weight of from about 200 to about 100,000 (column 8, lines 7-9).

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Regarding claim 11, Wehlage et al. disclose an electrolyte composition of claim 1 wherein the polyalkylene glycol is present in an amount of from 0.1 to 15 g/L (column 8, lines 7-14).

Regarding claim 12, Wehlage et al. disclose an electrolyte composition of claim 1 further comprising water (column 1, lines 13-18; column 2, lines 5-14). Examiner presumes the presence of water is inherent of an aqueous solution.

Regarding claim 13, Wehlage et al. disclose an electrolyte composition of claim 1 wherein the additives are selected from reducing agents, grain refiners, brightening agents and mixtures thereof (column 6, lines 45-48).

Regarding claim 14, Wehlage et al. disclose a method for depositing tin or tin-alloy on a substrate comprising the steps of contacting the substrate with the electrolyte composition of claim 1 and applying a sufficient current density to electrolyte to deposit the tin or tin-alloy on the substrate (column 8, lines 18-32).

Regarding claim 15, Wehlage et al. disclose a substrate having a tin or tin-alloy deposited thereon according to the method of claim 14 (column 8, lines 18-32).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 5, 8, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wehlage et al (US Pat. No. 5,951,841).

Regarding claim 5, Wehlage et al. are silent regarding the electrolyte composition of claim 1 wherein the acidic electrolyte is present in an amount in the range of 10 to 400 g/l. The claim language is drawn to the optimization of the bath composition. It has been found that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – In re Aller, 105 USPQ 233.

Regarding claim 8, Wehlage et al. are silent regarding the electrolyte composition of claim 1 wherein the alkylene oxide compound is present in an amount of from 0.1 to 15 mL/L. This claim language is drawn to the optimization of the bath. It has been found that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – In re Aller, 105 USPQ 233.

Regarding claim 16, Wehlage et al. are silent regarding the method of claim 14 wherein the current density is in the range of 1 to 2000 ASF. This claim language is drawn to the optimization of the bath. It has been found that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – In re Aller, 105 USPQ 233.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Federman et al. in view of Wehlage et al. (US Pat. No. 5,951,841).

Federman et al. disclose a method for high speed electroplating of tin or tin alloys comprising the steps of: a) utilizing high speed electroplating equipment comprising an

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electroplating cell; an overflow reservoir adjacent the cell; means for returning solution from the reservoir to the electroplating cell; means for directing a substrate to be plated from an entry point at one end of the cell to an exit at a second end of the cell (claim 1); b) introducing an electrolyte including a basis solution of one or more tin compounds, one or more acidic electrolytes, one or more alkylene oxide compounds (claim 1); c) continuously electroplating substrates with tin or tin-alloy at a sufficient current density and at a sufficient temperature for high speed electroplating as the substrates pass through the electroplating solution within the cell (claim 1).

Federman et al. are silent regarding the electrolyte comprising one or more polyalkylene glycols and optionally one or more additives. Wehlage et al. disclose, "an acidic electroplating bath for the electrolytic deposition of metallic layers on shaped articles, which comprises one or more metal salts, one or more brighteners, if required one or more metal conductive salts and if required, one or more auxiliary brighteners," (column 6, lines 40-45) wherein, "preferred metal salts are zinc salts and tin salts," (column 6, line 49). Federman et al., furthermore disclose, "Sulfonates of polyalkylene oxides or block copolymers of ethylene oxide and propylene oxide are also used as anionic surfactants," (column 7, lines 32-34), and "In additions to the stated surfactants, polyethylene glycols having molecular weight 200-1000 g/mol are also suitable auxiliary brighteners," (column 8, lines 7-9), wherein, "It is also possible to use a mixture of a plurality of surfactants, or auxiliary brighteners," (column 8, lines 12-14).

Wehlage et al. do not teach a high speed plating method using this electrolyte; however, with the exception of the polyethylene glycols and the optional additive, the electrolytic compositions of Federman et al. and Wehlage et al. comprise common components. Because

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both are used to electroplate tin, it would have been obvious to have used the electrolyte of Wehlage et al. in the process of Federman et al. because the electrolyte of Wehlage et al. contains de-foaming surfactants and brighteners to provide a decorative appearance to the coated article.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have included polyethylene glycols and an optional additive in an electrolyte consisting of one or more tin compounds, one or more acidic electrolytes, and one or more alkylene oxide compounds, as taught by Wehlage et al., in the high speed tin electroplating method of Federman et al. because Wehlage teach an electrolytic composition comprising a tin compound, an acidic electrolyte, an alkylene oxide compound, a polyalkylene glycol, and optional additives used to provide decorative coatings on shaped articles.

***Claim Rejections - 35 USC § 102/35 USC § 103***

10. Claims 2, 3, and 7 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wehlage et al. (US Pat. No. 5,951,841).

Regarding claim 2, Wehlage et al. are silent regarding the specific tin compounds selected from tin halides, tin sulfate, tin alkane sulfonate, tin aryl sulfonate, or tin alkanol sulfonate.

The reference deals with aqueous acidic electroplating baths, wherein the preferred metal salts are zinc salts and tin salts (column 6, line 49). The example given in the reference describes a zinc bath, wherein, "they contain, for example 50-150 g/l of zinc chloride or the equivalent amount of zinc sulfate," (column 6, lines 62-63). In the context of the reference, it would have



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been within the ordinary skill in the art to have substituted the zinc chloride or zinc sulfate with tin chloride or tin sulfate because the preferred metal salts of the invention are zinc and tin salts.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious within the ordinary skill in the art.

Regarding claim 3, Wehlage et al. are silent regarding the electrolyte composition of claim 1 wherein the tin compound is present in an amount in the range of from 5 to 100 g/l.

The reference deals with aqueous acidic electroplating baths, wherein the preferred metal salts are zinc salts and tin salts (column 6, line 49). The example given in the reference describes a zinc bath, wherein, "they contain, for example 50-150 g/l of zinc chloride or the equivalent amount of zinc sulfate," (column 6, lines 62-63). In the context of the reference, it would have been within the ordinary skill in the art to have substituted the zinc chloride or zinc sulfate with tin chloride or tin sulfate because the preferred metal salts of the invention are zinc and tin salts.

Therefore, if not explicitly taught in the reference, then the teachings would have been obvious within the ordinary skill in the art.

Furthermore, the claim language is drawn to the optimization of the bath composition. It has been found that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – In re Aller, 105 USPQ 233.

Regarding claim 7, Wehlage et al. are silent regarding the electrolyte composition of claim 1 wherein the alkylene oxide has an average molecular weight of from about 500 to about 10,000.

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Wehlage et al. disclose the use of block copolymers of ethylene oxide or propylene oxide as anionic surfactants (column 7, lines 32-34). It would have been inherent of EO/PO copolymer to have an average molecular weight of from about 500 to about 10,000.

Therefore if not explicitly taught in the reference, then the teachings would have been obvious within the ordinary skill in the art.


Furthermore, the claim language is drawn to the optimization of the bath composition. It has been found that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation – In re Aller, 105 USPQ 233.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 703-305-0268. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathryn Gorgos can be reached on 703-308-3328. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Michael J. Feely  
March 5, 2001

  
Kathryn Gorgos  
Supervisory Patent Examiner  
Technical Center